

Propiedades de la TL.

$$\textcircled{7} \quad \mathcal{L}\{f(t-a)\} = e^{-as} F(s)$$

$$\textcircled{8} \quad \mathcal{L}\{e^{at} f(t)\} = F(s-a)$$

$$\mathcal{L}\{\cos(bt)\} = \frac{s}{s^2 + b^2}$$

$$\mathcal{L}\{e^{at} \cos(bt)\} = \frac{(s-a)}{(s-a)^2 + b^2}$$

$$\mathcal{L}\{1\} = \frac{1}{s}$$

$$\mathcal{L}\{e^{at} \cdot 1\} = \frac{1}{s-a}$$

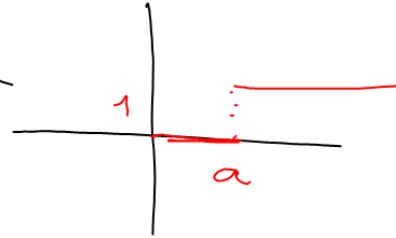
$$\mathcal{L}\{t^2 e^{2t}\} = \frac{2!}{(s-2)^3}$$

$$\mathcal{L}\{t^2\} = \frac{2!}{s^3}$$

Funciones Seccionalmente Continuas

función Escalón Unitario

$$u(t-a) = \begin{cases} 0 & ; t < a \\ 1 & ; t \geq a \end{cases}$$

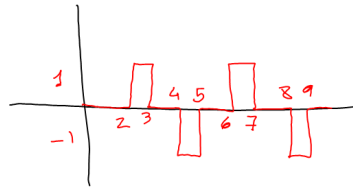


$$L \frac{di}{dt} + Ri = u(t-a) 117 \cos(60t)$$

$$\mathcal{L}\{f(t-a)\} = e^{-as} F(s)$$

$$\mathcal{L}\{1\} = \frac{1}{s}$$

$$\mathcal{L}\{u(t-a)\} = \frac{e^{-as}}{s}$$

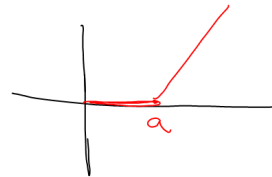


$$x(t) = u(t-2) - u(t-3) - u(t-4) + u(t-5) + u(t-6) - u(t-7) - u(t-8) + u(t-9)$$

$$\mathcal{L}\{x(t)\} = \frac{e^{-2s}}{s} - \frac{e^{-3s}}{s} - \frac{e^{-4s}}{s} + \frac{e^{-5s}}{s} + \frac{e^{-6s}}{s} - \frac{e^{-7s}}{s} - \frac{e^{-8s}}{s} + \frac{e^{-9s}}{s}$$

función Rampa Unitaria

$$r(t-a) = \begin{cases} 0 & t < a \\ (t-a) & t \geq a \end{cases}$$



$$\mathcal{L}\{r(t-a)\} = \frac{e^{-as}}{s^2}$$

$$\mathcal{L}\{t\} = \frac{1}{s^2}$$

$$\mathcal{L}\{r(t-s)\} = \frac{e^{-ss}}{s^2}$$

$$\mathcal{L}\left\{\frac{d}{dt}r(t-s)\right\} = s\left[\frac{e^{-ss}}{s^2}\right] - f(0)$$

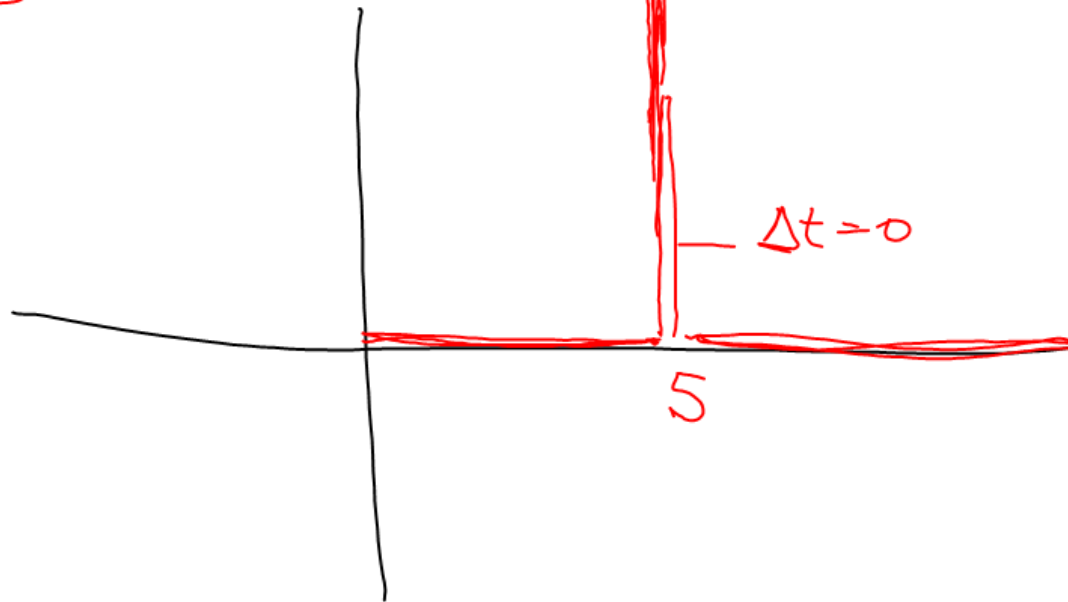
$$\mathcal{L}\left\{\frac{d}{dt}r(t-s)\right\} = \frac{e^{-ss}}{s}$$

$$\mathcal{L}\left\{\frac{d}{dt}r(t-s)\right\} = \mathcal{L}\{u(t-s)\}$$

$$\frac{d}{dt}r(t-s) = u(t-s)$$

$$\delta(t-5) = \begin{cases} 0; & t \neq 5 \\ \int_{-\infty}^{\infty} \delta(t-5) dt = 1 \end{cases}$$

$$\lim_{b \rightarrow \infty} \frac{1}{b} = 0$$



$$\mathcal{L}\{u(t-5)\} = \frac{e^{-5s}}{s}$$

$$\mathcal{L}\left\{\frac{d}{dt}u(t-5)\right\} = s\left[\frac{e^{-5s}}{s}\right] - f(0)$$

$$\mathcal{L}\left\{\frac{d}{dt}u(t-5)\right\} = e^{-5s}$$

$$\mathcal{L}\left\{\frac{d}{dt}u(t-5)\right\} = \mathcal{L}\{f(t-5)\}$$

$$\frac{d}{dt}u(t-5) = \delta(t-5)$$

